Comment on essd-2021-168
Anonymous Referee #2

Referee comment on "A worldwide meta-analysis (1977–2020) of sediment core dating using fallout radionuclides including \(^{137}\text{Cs}\) and \(^{210}\text{Pb}_{xs}\)" by Anthony Foucher et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-168-RC3, 2021

The authors present a manuscript titled "A worldwide meta-analysis (1977-2020) of sediment core dating using fallout radionuclides including \(^{137}\text{Cs}\) and \(^{210}\text{Pb}_{xs}\)". The aim of the manuscript is to do a review to sediment core dating by using radionuclides. The authors have also uploaded a comprehensive data set to open source platform. I think the work is of interest and is of use to scientific community. The English used in this manuscript is at good level and the narrative proceeds in logical manor. I think is ready for publication after minor revision.

Here are some comments in more detail

- Generally, try to use past tense in the manuscript instead of present tense

- The Chinese nuclear weapon tests are referred here as "local releases". I find this term controversial since the Chinese tests were detected in aerosols in the other side of the world and Cs-137 originating from the Chinese test have been detected in Scandinavia which is practically on the other side of the globe.

- The authors used one database and two search words in their data acquisition. I am bit doubtful that this provided the best result although the result consisted of 573 articles, Especially some studies utilizing Pb-210 as the main nuclide may have been missed.

- Section 3.3. I am bit concerned if this section actually deals with excess or unsupported fraction of the Pb-210 ? It is not clearly mentioned how the supported and unsupported fractions were distinguished ? In section 3.4. the isotopes needed to determine the supported fraction. namely Ra-226 and it's daughters, are observed in very rare cases.

- Section 4.1. what is meant by post-accidental fallout ? Isn't all the fallout post-accidental ie, deposited after the accident

  line 364: which isotopic evidences you are referring to ?

  line 369: A similar findings was made...

  line 400: reusable format ? what does this mean ?

  line 413: "complementary tracers" what tracers are you referring to ? Please provide and
example.